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Impact of Macroeconomic Variables on the Capital Structure of Listed Insurance Firms in Nigeria

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Abstract:

This paper seeks to examine the impact of macroeconomic variables on the capital structure decision of listed insurance firms in Nigeria for the period of 2008 – 2015. Many studies have been conducted on the determinants of capital structure of firms. However, the dominant tendency has been a focus on endogenous factors. Most studies that addressed the impact of factors in the external environment of the firm like macroeconomic conditions tended to generalize findings across countries and industries leaving out country and industry peculiarities and specificities. In addition, these studies were not carried out using Nigerian data. This study seeks to extend the literature by examining the impact of exogenous factors in the firm's economic environment to add to the stock of knowledge on the nature and direction of the relationship between the capital structure of insurance firms in Nigeria on one hand, and inflation, interest rate and GDP growth rate on the other. The study used secondary data obtained from published annual reports of listed insurance firms in Nigeria, Central Bank of Nigeria Statistical Bulletin and the World Bank Open Data Base. The study used multiple linear regression and correlation as a technique of data analysis. It was found that inflation, interest rate and GDP growth rate have a significant impact on the capital structure of insurance firms in Nigeria. It is recommended that corporate managers in the insurance industry in Nigeria should approach their financing decision holistically as to critically consider factors in both firm-specific characteristics and prevailing macroeconomic condition.

Keywords: Capital structure, macroeconomic variables, insurance firms

1. Introduction

The significance of the structure of a firm's capital to its performance has, for long, been a settled issue. There has been a profound consensus among scholars that, in the final analysis, the decision corporate managers take about the structure of the firm's capital has far-reaching implications on its profitability, and ultimately, its value. Capital structure is simply the proportion of debt and equity in the capital composition of a company. Corporate managers must strike a favourable balance between shareholders' expectations and capital requirements of the firm. Thus, managers must seek to have the most favourable mix of debt and equity that minimizes the cost of capital and maximizes the value of the firm. However, the fundamental questions have been, and still are: Why do some firms choose to issue large amounts of long-term debt, while other companies issue little or no debt? What influences managers' decision to finance with debt or with equity? And, how does this decision affect the overall value of the firm?

These questions have preoccupied scholars in the fields of finance and economics for nearly half a century. And although the multiplicity of factors influencing a firm's capital structure has made it somewhat impossible to come up with a universal answer, experience and research have taught us much about how companies set their leverage ratios. Firms are said to be using financial leverage or gearing when they have debt in their capital structure. Debt can dramatically affect the returns that firms can deliver to their shareholders.

Researchers have dedicated great effort in trying to understand the key influences on managers' decisions to finance with debt or with equity. The dominant tendency has been a focus on endogenous factors like firm-specific variables such as age, size, growth and liquidity Chung (1993), Sayilgan, Karabacak and Küçükkocalıoglu (2006), Mohammed, Perry and Rimbey, (1998), Icke and Ivegen (2011), Kila and Mahmood (2011). However, the literature on the influence of factors in the external environment of the firm like macroeconomic dynamics such as interest rate, inflation, and the gross domestic product (GDP) growth rate has been insufficient as to draw a conclusive understanding of their effect on capital structure. Again, the extant literature focusing on the effect of these macroeconomic variables on capital structure has tended to generalize findings across countries and industries leaving out country and industry peculiarities and specificities.

But if country and industry peculiarities have no value in the effect that macroeconomic variables have on capital structure choices, then we may not expect to see any predictable patterns and variability in leverage ratios across companies and industries operating in different countries. However, when we examine different firms in different industries, we can quickly conclude that capital structures

are not randomly generated. Instead, they tend to follow peculiar patterns. Certain industries have high debt-to-equity ratios, whereas other industries employ little or no long-term debt financing. Capital intensive sector such as manufacturing tends to have high leverage in contrast to service and high-tech industries.

The nature of macroeconomic conditions in developed economies differs from that of emerging economies. This pattern is observed in almost all countries, suggesting that industry's operating environment significantly influences the capital structure choices of firms in the industry worldwide (Megginson, Smart & Brian, 2008). This assertion finds support in other researches (Demirgüç-Kunt and Maksimovic, 1999, Booth, Demirgüç-Kunt and Maksimovic, 2001, Claessens, Djankov and Nenova, 2001; Bancel and Mittoo, 2004) find that a firm's capital structure is not only influenced by firm-specific factors but also by country-specific factors. Specifically, Jong, Kabir, and Nguyen (2007) observe that country-specific determinants should not be neglected in capital structure studies since they have a sizeable explanatory power.

Capital structure decisions on insurance firms differs from that of manufacturing or consumer goods firms. Insurance managers' concern is not limited to delivering returns to shareholders and maximizing the value of the firm but extended to maintaining sufficient surplus to guarantee potential claims settlement that could arise out of losses to policyholders. In offering insurance policies, the insurer effectively levers ownership capital by "borrowing" from the policyholders. A feature specific to insurance is that policyholders are acutely sensitive to the financial standing of the insurance firm covering their risks. Thus, insurers are faced with a basic economic trade-off between increasing the level of surplus capital on the one hand, thereby incurring high costs in imperfect capital markets, or decreasing the surplus level on the other, which erodes the quality and value of insurance protection they offer (Laeven & Perotti, 2010).

Unfortunately, few researches focused on examining the effect of macroeconomic variables on the capital structure of insurance firms. In addition, these studies were not carried out using Nigerian data. This study therefore, attempts to investigate the impact of macroeconomic variables on the capital structure of insurance firms in Nigeria using inflation, interest rate and GDP growth rate as explanatory variables.

In line with the objective of the study, the following hypotheses have been formulated in null form:

- H0₁ Inflation has no significant impact on the capital structure of insurance firms in Nigeria.
- H0₂ Interest rate has no significant impact on the capital structure of insurance firms in Nigeria.
- H0₃ GDP growth rate has no significant impact on the capital structure of insurance firms in Nigeria.

The focus of the study is on the impact of macroeconomic variables on the capital structure of 26 quoted insurance firms in Nigeria. The study covered a period of 8 years (2008 to 2015) using inflation, interest rate, and GDP growth rate as independent variables to explain capital structure as the dependent variable. The study is limited to insurance firms listed on the Nigerian Stock Exchange post consolidation. The study seeks to extend literature by examining the impact of these exogenous factors in the firm's economic environment to add to the stock of knowledge on the nature and direction of the relationship between capital structure of insurance firms in Nigeria on one hand, and inflation, interest rate and GDP growth rate on the other. The findings of this study will enable insurance firms in Nigeria to understand the dynamics of these macroeconomic variables as they relate to capital structure decisions and their ultimate bearing on the insurance firm's ability to fulfil its obligations to its policyholders and to meet the expectations of its shareholders.

The remaining part of this paper is structured as follows: section 2 presents literature review, section 3 describes the research methodology. Results and discussion are presented in section 4, while section 5 presents conclusion and recommendation of the paper.

2. Literature Review

The debt-equity trade-off forms the central theme of discussions about the firm's capital structure. Managers are expected to invest in projects that yield a return greater than the minimum acceptable hurdle rate. The hurdle rate should be higher for riskier projects and reflect the financing mix used. The returns on projects should be measured based on cash flows generated and the timing of these cash flows; they should also consider both positive and negative side effects of these projects. They must choose a financing mix that minimizes the hurdle rate and matches the assets being financed. And if there are not enough investments that earn the hurdle rate, they must return the cash to stockholders.

Since the seminal paper by Modigliani and Miller (1958) which proposes the "irrelevance theory of capital structure", the theory of corporate capital structure has been one of the most discussed issues in the field of business finance. Subsequently, three major theories of capital structure were developed clearly deviating from the perfect capital markets paradigm which formed the basis of the "irrelevance model" proposed by Modigliani and Miller. The first is the trade-off theory. The trade-off theory (Kraus and Litzenberger, 1973) assumes that firms will choose debt over equity when it is possible to trade-off tax benefits and bankruptcy and agency costs associated with debt. This theory suggests that expected bankruptcy costs are lower in the period of economic expansion thus allowing firms to have a more taxable income to shield (Khanna et al., 2015).

The second is the pecking order theory (Myers, 1984, Myers and Majluf, 1984) which proposes that firms follow a financing hierarchy to minimize the problem of information asymmetry between the firm's managers and shareholders. This means that during an economic boom, firms have more internal funds (retained earnings), and, tend to use them first before considering debt, then equity. Almost two decades later, Baker and Wurgler (2002) have suggested a new theory of capital structure: the "market timing theory of capital structure". This theory states that the current capital structure is the cumulative outcome of past attempts to time the equity market.

2.1.1. The Modigliani and Miller Theorem

The theory of business finance in a modern sense starts with the Modigliani and Miller (1958) capital structure irrelevance proposition. Modigliani and Miller start by assuming that the firm has a particular set of expected cash flows. When the firm chooses a certain proportion of debt and equity to finance its assets, all that it does is to divide up the cash flows among investors. Investors and firms are assumed to have equal access to financial markets, which allows for homemade leverage. As a result, the leverage of the firm has no effect on the market value of the firm.

There are two different types of capital structure irrelevance propositions. The first is the classic arbitrage-based irrelevance propositions. This attempts to explain a situation where arbitrage by investors keeps the value of the firm independent of its leverage.

The second irrelevance proposition holds that given a firm's investment policy, the dividend payout it chooses to follow will affect neither the current price of its shares nor the total return to its shareholders (Miller and Modigliani, 1961). In other words, in perfect markets, neither capital structure choices nor dividend policy decisions matter. The 1958 paper generated series of subsequent research focusing on refuting the "irrelevance" proposition. The dominant argument used in refuting the "irrelevance" proposition has to do with realism. In a real-world scenario market, cannot be perfect, and thus, consideration of taxes, transaction costs, bankruptcy costs, agency conflicts, etc. will negate the "irrelevance" proposition.

While the Modigliani-Miller theorem does not provide a description of how firms finance their operations that fit in a real-world scenario, it did provide reasons why financing decision should matter to corporate managers.

2.1.2. The Trade-off Theory

The term trade-off theory connotes a body of related theories: The static trade-off theory and the dynamic trade-off theory. These theories attempt to explain how managers evaluate the costs and benefits of alternative leverage plans. If corporate income tax were to be added to the Modigliani-Miller "irrelevance" proposition, it will create a benefit for debt in that it served to shield earnings from taxes (Luigi & Sorin 2008).

2.1.3. The Pecking Order Theory

The pecking order theory (Mayers & Majluf, 1984) suggests that when faced with capital structure decision, firms tend to follow a pattern of ranking choices available to them. First, they prefer to finance with retained earnings, then with debt, and finally, with equity respectively. The argument of this theory is that equity is the less preferred source of financing because investors tend to suspect that the firm is over-valued and managers are taking advantage of this over-valuation when they issue new stock. This is because of the assumption that managers possess superior information about the true condition of the firm. As a result, investors will place a lower value to the new equities.

2.1.4. The Market Timing Theory

The market timing theory attempts to explain how firms decide whether to finance their investment with equity or with debt instruments. (Baker & Wurgler, 2002) argue that firms do not generally care whether they finance with debt or equity; rather they simply choose the financing instrument which at the point in time seems more favourable. The capital structure of a firm is the result of the transactions with various suppliers of finance. In the perfect capital markets world of Modigliani and Miller, the costs of different forms of financing do not vary independently and therefore there is no extra gain from opportunistically choosing among them. But, in the final analysis, financing does clearly matter. And this is due to the implications of taxes, differences in information and the agency costs.

But the various theories of capital structure do not agree in their interpretations of these factors. Each emphasizes some cost and some benefits of alternative financing method. In the trade-off theory, managers' response to taxes and bankruptcy cost is explained in their choice of debt over equity. In the pecking order theory, the problem of information asymmetry between shareholders and mangers is responsible for the preference of debt over equity. And in the market timing theory, the question of optimality is, technically, inconsequential, in that what guides managers' decision is neither the derivable benefit, nor the accruable cost, associated with any financing instrument, rather, their decision is a function of the market behaviour.

Thus, in studying the structure of the capital composition of firms within the context of macroeconomic conditions which consistently stimulate market behaviour, the market timing theory stands more erect than the trade-off and the pecking order theories. And, thus, it underpins this study.

3. Conceptual Framework

3.1. Inflation

Inflation is an important indicator to measure the state of the economy, which is the general price level in a given period. Li and Zhang (2014) argue that debt ratio is positively correlated with inflation, but negatively correlated with the income tax ratio. This suggests that when the consumer price index goes up, firms may tend to increase their leverage. Khanna1, Srivastava and Medury (2015) observe that with the rise in the price level of different commodities, the overall costs of firms' raw materials and other facilities like fuel, energy, transportation etc. also rises and so does the capital requirement of the firms.

Debt financing decisions are affected by inflation as there is no provision for perfect inflation adjustments, Man (2010). The real tax effect of interest deductions on debt financing increases when inflation increases. This effect occurs because firms are allowed to deduct their interest expenses at the nominal interest rate, taking into consideration the effect of inflation. However, Schall (1984) as

quoted in Man (2010) offers an opposing view on the effect of inflation on debt financing. He stated that, during periods of high inflation, the after-tax return on shares and thus equity financing is relatively higher than the return on bonds. Therefore, investors will exchange debt financing for equity financing and the firm's debt ratio will decrease. The effect of inflation on equity financing is thus an important capital structure consideration to the firm.

In any case, market timing theory proposes that firms issue debt when interest on the debt is low. Thus, if firms predict that future inflationary rate will be high upon which interest rate depends, they will issue debt securities to outsmart the macroeconomic condition. Thus, market timing theory holds the existence of causality between inflation and debt. And this occurs when firms expect future inflation to be on the rise.

3.2. Interest Rate

Interest rate represents the amount charged by a lender to a borrower expressed as a percentage of the amount borrowed. It is the cost of borrowing capital for a given period of time. Several studies show that prevailing interest rate affect corporate financial policy decision. For example, Muthama, Mbaluka and Kalunda (2013) in a study of listed companies in Kenya found interest rate positively influencing total debt ratio. Accordingly, Manns (2010) found a significant positive correlation between CPI (inflation) and leverage ratio in a study of the effect of the changing economic environment on the capital structure of South African listed industrial firms. In a related literature, Bodie et al.'s (2003) argues that interest rate and inflation tend to move in the same direction.

3.3. Gross Domestic Product Growth Rate

Gross Domestic Product growth rate is a measure of the size of an economy and how the economy is performing. The growth rate of real GDP is used as an indicator of the robustness or otherwise of the economy. In a study of the relationship between economic growth and capital structure of listed companies in Japan, Malaysia, and Pakistan, Mahmud (2003) found that growth in GDP was significantly affecting growth in the capital structure of companies in Japan and Malaysia while interest rate was a major decisive factor affecting demand for credit in Japan and Malaysia. Mahmud (2003) further notes that Japanese companies are more leveraged companies than Malaysian companies and thus concludes that Japanese companies save tax and take more debt while Malaysian companies are risk averse and look consciously at interest rate.

The apparent variability in the effect of GDP on capital structure across economies as noted by Mahmud (2003) is further acknowledged by a comparative study of capital structure of firms across different European companies. In that study, Mokhova and Zinecker (2014) found that GDP growth has non-significant and weak relation with all proxies of capital structure in all investigated countries, except Greece, where it has significant strong positive influence on short-term debt ratio.

Furthermore, Jong, Kabir and Nguyen (2007) found evidence suggesting that creditor right protection, bond market development, and GDP growth rate have a significant influence on corporate capital structure.

4. Methodology

The study used descriptive method and data were obtained from secondary source. The secondary data in respect of the dependent variable were sourced from the published annual reports for the period of 8 years (2008 – 2015) of 25 insurance firms listed on the Nigerian Stock Exchange. The sourced data for inflation, interest rate and GDP growth rate were compiled from various issues of Central Bank of Nigeria Statistical Bulletin and the World Bank Open Data Base. Multiple linear regression and correlation was employed using Statistical Package for Social Science (SPSS) to analyse the data.

4.1. Model Specification and Variable Measurement

 $LEV = f (INF, INT, RGDP) \dots (i)$

Equation (i) can be expressed in an exponential regression model as follows:

 $LEV = \beta_a + \beta 1INF_{it} + \beta 2INT_{it} + \beta 3RGDP_{it} + \mu_{it}$ (ii)

Dependent variable and independent variable used in the model are defined as follows:

Variable Acronym	Variable Name	Definition and Measurement	
LEV	Leverage Ratio	Debt to capitalization ratio	
INF	Inflation Rate	Increase in general level of prices measured by the Consumer Price Index (CPI)	
INT	Interest Rate	The amount charged by the lender to the borrower which represent the cost of borrowing	
RGDP	Gross Domestic Product Growth Rate	The measure of the size of an economy and how the economy is performing.	

Table 1

Source: Compiled by the researcher 2016

5. Result and Discussion

Variables	LEV	INF	INT	RGDP		
LEV	1					
INF	-0.143	1				
INT	0.041	-0.611	1			
RGDP	-0.141	0.436	-0.473	1		
Table 2. Convolation Matnix						

Table 2: Correlation Matrix

From Table 2 above it can be deduced that inflation is negatively but significantly correlated with leverage at 5% level of significance. Interest rate on the other hand is positively and significantly correlated with leverage at 5% level of significance. Gross Domestic Product growth rate is negatively but significantly correlated with leverage at 5% level of significance. Inflation is found to be negatively but significantly correlated with interest at 5% level of significance. Inflation and RGDP are found to be positively and significantly correlated at 5% level of significantly correlated at 5%

Variables	Coefficient	t-Values	p-Values	Tolerance	VIF
Constant	0.709	6.271	0.000		
INF	-0.018	-3.789	0.000	0.599	1.670
INT	-0.001	-6.274	0.000	0.574	1.743
RGDP	0.017	1.588	0.114	0.742	1.348
R					0.689
R^2					0.626
Adjusted R ²					0.562
F-Statistics					4.531
F-Significance					0.000
Durbin Watson					0.530

Table 3: Summary of Regression Result Source: Output from SPSS 20

The regression result indicates that INF has a coefficient of -0.018 with a t-value of -3.789 and a significance value of 0.000. This signifies that INF and leverage have negative but significant relationship. This means that an increase in inflation will trigger a decrease in leverage. Thus 1% increase in inflation will translate into 1.8% decrease in leverage.

The result also reveals that interest rate has a negative coefficient of -0.00, a t-value of -6.274 and a significance value of 0.000. This suggests an inverse relationship between interest rate and leverage. Meaning that as interest rate increases, leverage decreases. Thus a 1% increase in interest rate culminates into a decrease in leverage by 0.1%.

It was also found from the result that RGDP has coefficient of 0.017, a t-value 1.588 and significance value of 0.114. This indicates a positive relationship between leverage and RGDP. Meaning that as RGDP increases, leverage increases as well. Thus a 1% increase in RGDP brings about a 1.7% increase in leverage.

Furthermore, the regression table 4.2 above shows R value of 0.689 (69%) indicating a significant relationship between macroeconomic variables and leverage ratio in Nigerian insurance firms. This implies that macroeconomic conditions influence how insurance firms set their leverage ratio in Nigeria. The R²value is 0.626 (62.6%) while the adjusted R²value is 0.562 (56.2%). This indicates that 56.2% of the variation in the capital structure of insurance firms in Nigeria is explained by the independent variables captured in this study. The remaining 43.8% is thus covered by other variables not included in the model used by this study. The Durbin Watson value of 0.530 shows that serial correlation poses no validity problem to the statistical inference that is derivable from the findings of the study.

The findings that macroeconomic variables influence capital structure is consistent with the findings of Mahmud (2003), Mokhova and Zinecker (2014), Khanna et al, (2015) and Jong, Kabir and Nguyen (2007)

6. Conclusion and Recommendations

The study investigated the mode and the direction of the relationship between macroeconomic variables and capital structure of listed insurance firms in Nigeria and the findings of the study revealed that macroeconomic variables are among the determinants of the capital structure of insurance firms in Nigeria. Specifically, the study found out that inflation and interest rates have inverse, though weak, relationship with the leverage ratio of insurance firms in Nigeria in that an upward movement in rates of inflation and interest is reflected in a downward movement in the leverage ratio of the insurance firms. Conversely, gross domestic product growth rate is found to have a rather strong positive relationship with the leverage ratio of insurance firms in Nigeria.

In line with these findings, the researcher concludes that there is sufficient empirical evidence to suggest that the capital structure of insurance firms in Nigeria is significantly determined by variations in macroeconomic conditions.

The researcher, therefore, recommends that corporate managers in the insurance industry in Nigeria should approach their financing decision holistically as to critically consider factors in both firm-specific characteristics and prevailing macroeconomic condition in

the country. Insurance managers should strive to maintain an optimal capital structure that ensures return to shareholders and improving the value of the firm without necessarily compromising policyholders' funds and the firm's ability to meet up with potential claims that may arise out losses to its policyholders. Finally, managers should exploit the market timing theory by consistently tracking market movements and the general economic atmosphere in order to raise equity or debt financing when market conditions are favourable.

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